

// BLUE_DOT ROBOT ASSISTANT FOR ELECTIVE SUBJECTS

Tania Guerrero - Josue Martinez

Julio 2024

Introduction

Social Cap.

Architecture

Components

Demo

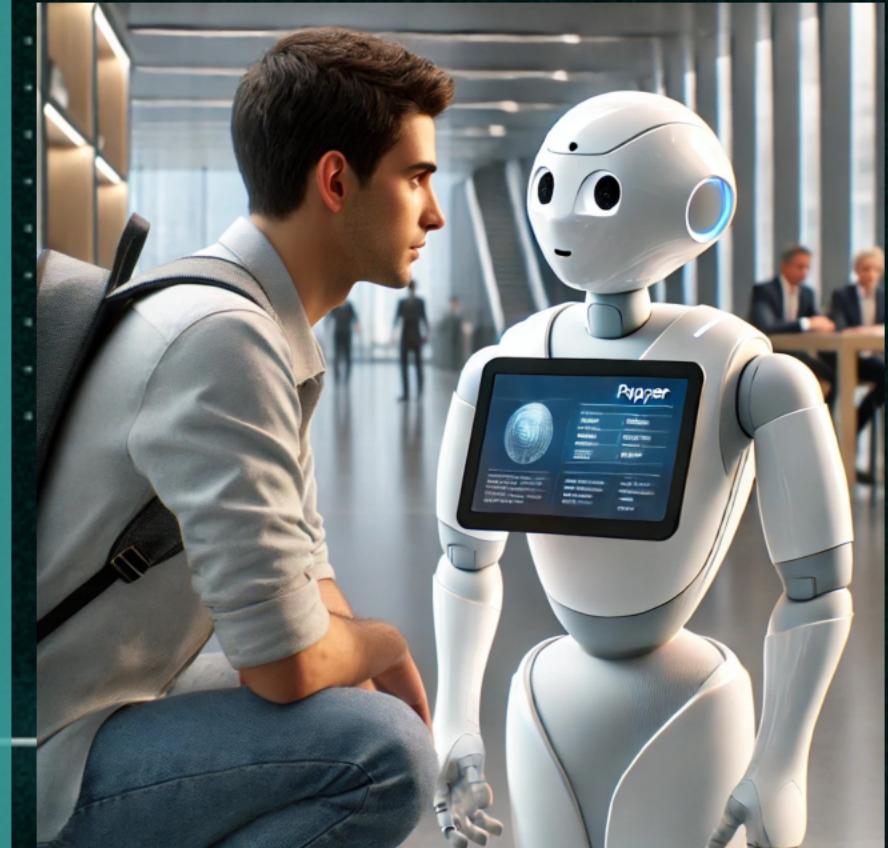


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Introduction

- Blue Dot Elective Helper is a project aimed at enhancing the interaction between humans and robots, specifically using Pepper robot.
- Pepper to help students choose electives subjects in the autonomous systems master's degree at HBRS University.



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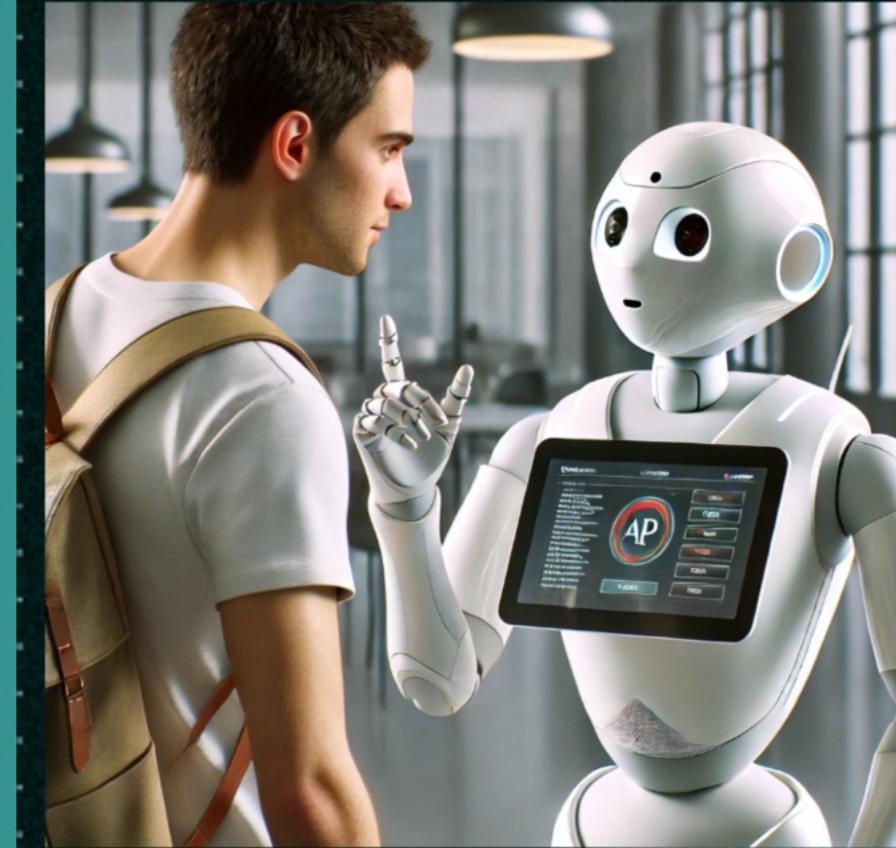


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Social interaction capabilities

- Pepper detects faces using a webcam.
Initiates a personalized, multi-modal greeting upon face detection.
- Assists users in finding preferred elective subjects through conversation.
- Uses an internal model to recommend courses based on user preferences
- Uses illustrative gestures during conversation.
- Bids farewell in a socially appropriate manner after the conversation.
- Filters and refrains from engaging in abusive language.



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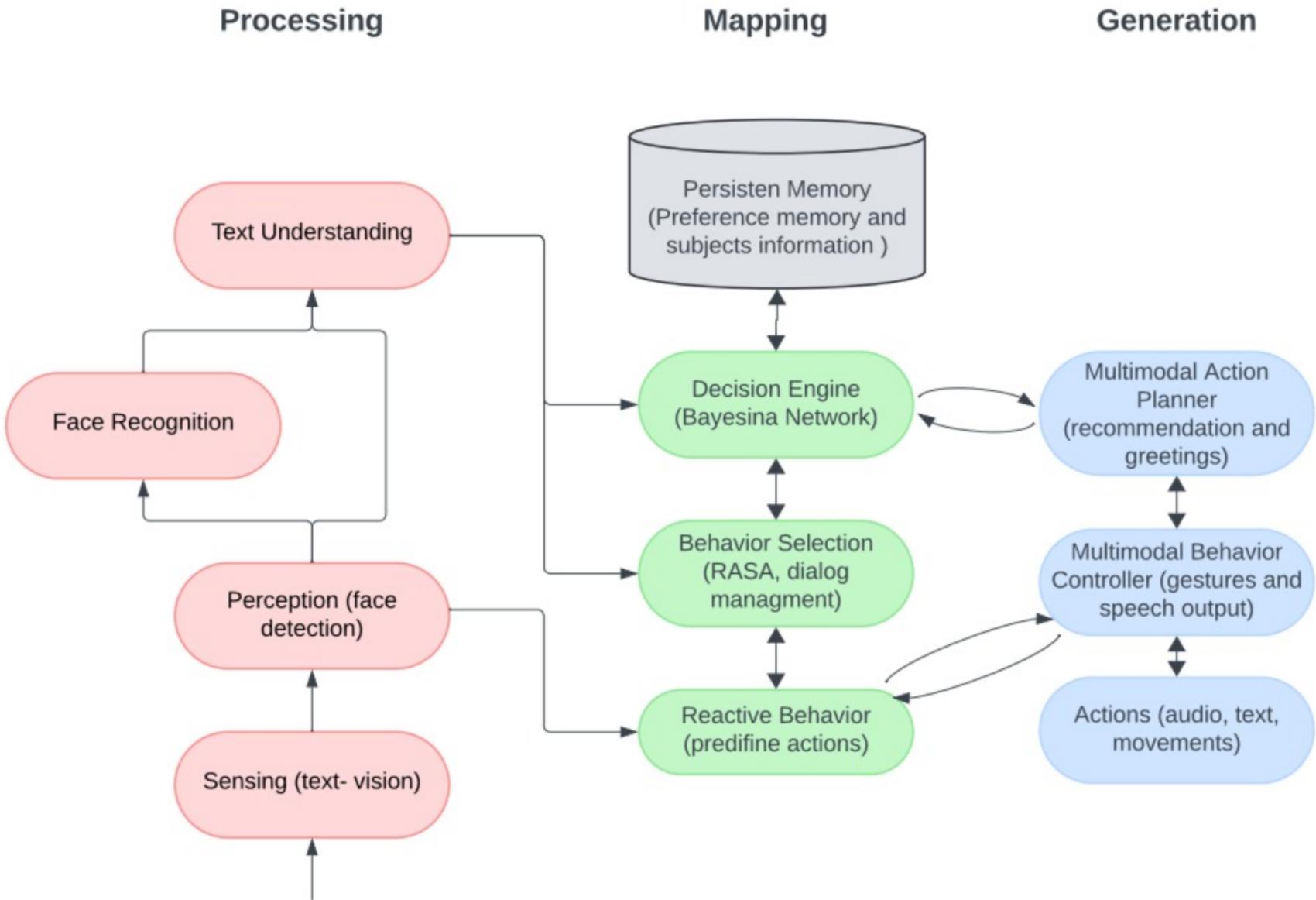
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Main components

The project consist in four scripts for each functionality and one for integrating all of them:

- pepper_interaction.py
- rasa_interaction.py
- bayesian_nt.py
- face_detection.py
- main.py

*all available in the public repository

Peper
Interactions



Face Detection



Bayesian



rasa com.



Main



Peper Interaction

- Initial Position
- Wave Hand
- Play Sound
- Gesture Hand
- Wave Hand & say text
- Say Multiple texts
- Say Recomendation

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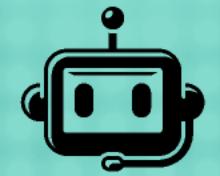
Face Detection



Bayesian



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Main



Face Detection

Detect face and greet

- Face detection using OpenCV
- Calculate the center of face
- Move pepper Head (yaw, pitch) to follow the center
- Start conversion if in center

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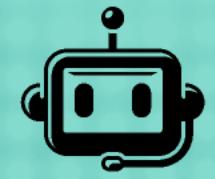
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Bayesian



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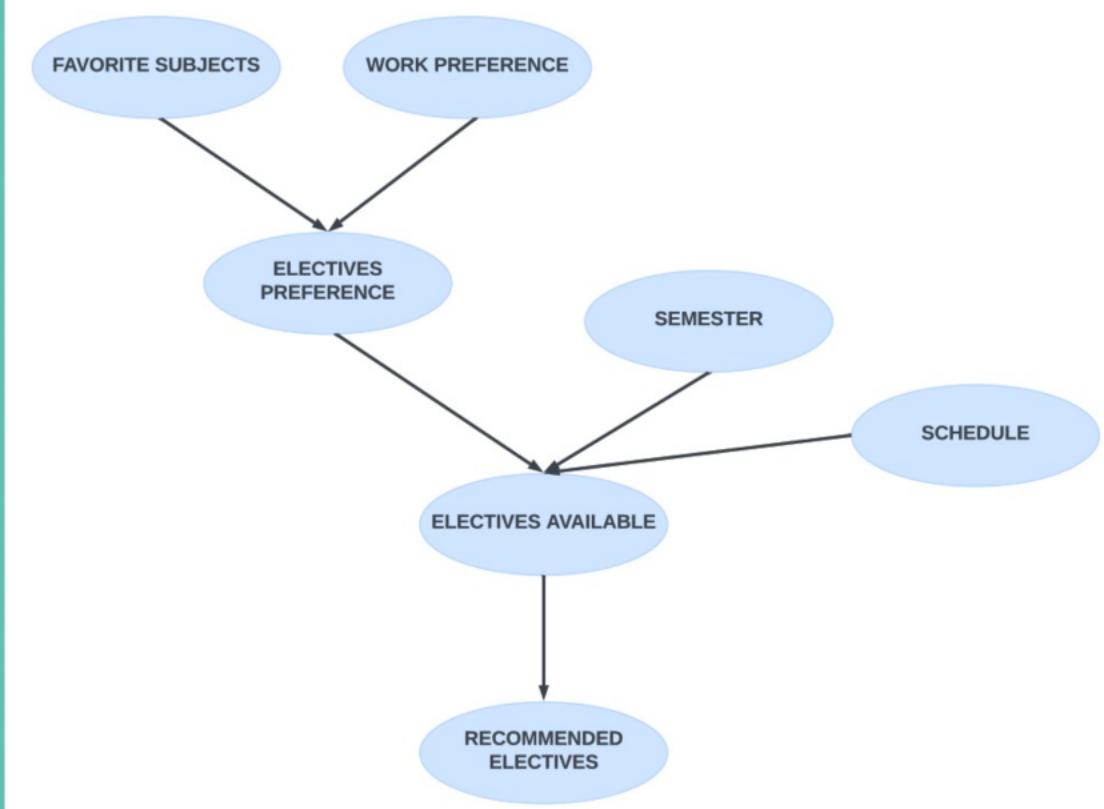


Main



Bayesian

- variables: favorite subject, work preference, semester, and schedule
- sets up relationships
- specifies conditional probability tables (CPTs)
- uses inference to determine the top three recommended electives.



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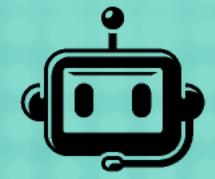
Face Detection



Bayesian



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Main



Rasa interaction

Rasa sent messages:

- From a trained model
- Open `rasa run --enable-api` (start rasa server)

From script:

Using request library get messages from server:

- text
- entities

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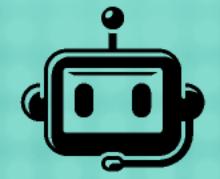
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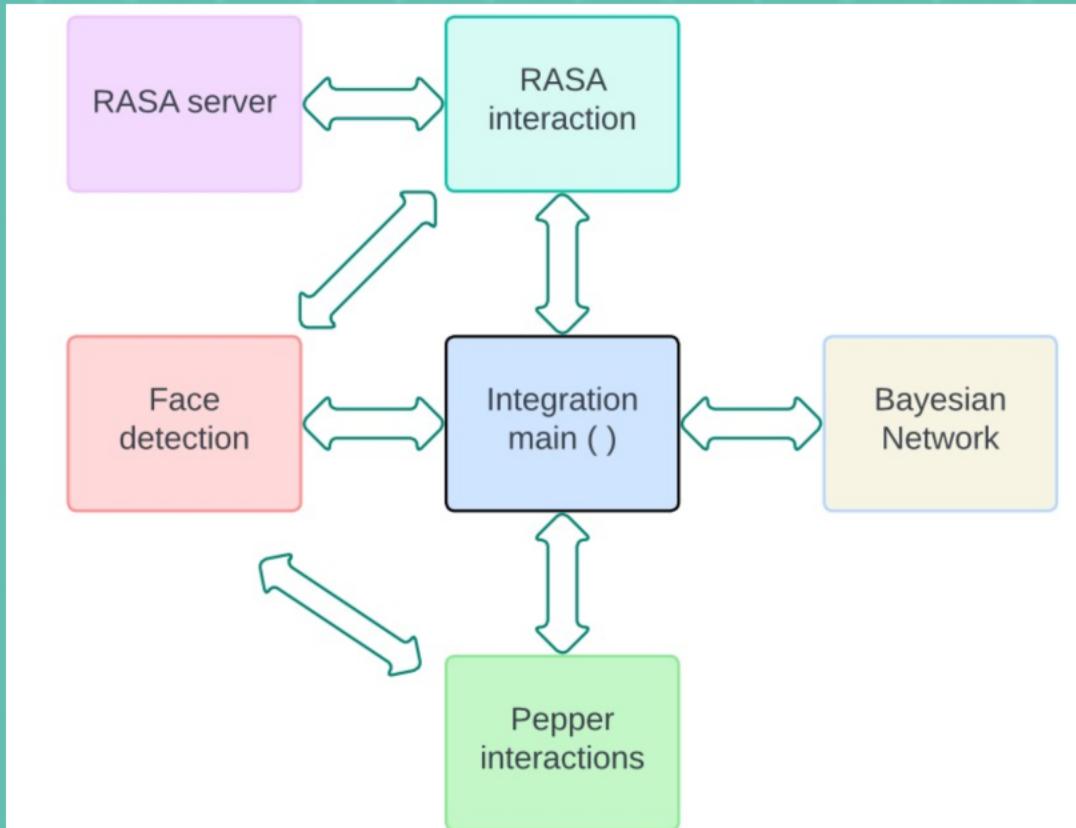
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Main



Main



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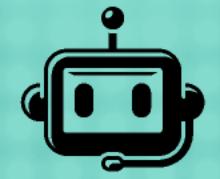
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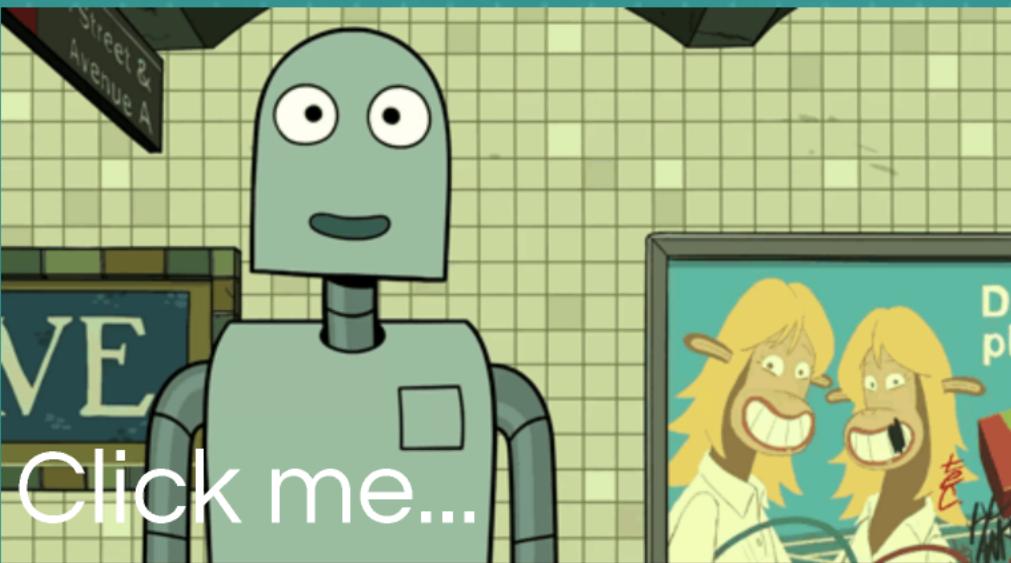


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Results

Video link:



Click me...

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